



# POLYBROMINATED BIPHENYLS (PBBs)

Agency for Toxic Substances and Disease Registry ToxFAQs

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This fact sheet answers the most frequently asked health questions (FAQs) about polybrominated biphenyls (PBBs). For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

**SUMMARY: Polybrominated biphenyls have not been manufactured in the United States since 1977, so current exposure is limited. Acne and loss of hair were noted in persons who accidentally ate PBBs in the 1970s. These chemicals have been found in at least 8 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).**

## What are polybrominated biphenyls (PBBs)?

(Pronounced p<sup>1</sup>/<sub>4</sub> "br<sup>1</sup>/<sub>2</sub> m...n<sup>3</sup>t<sup>1</sup>d b<sup>0</sup>-fun...lz)

PBBs are a group of manufactured chemicals that may contain up to 209 individual compounds. In many ways, PBBs are similar to polychlorinated biphenyls (PCBs), which have also received public attention.

There is no known natural source of PBBs. They are white solids and do not have a distinct smell.

In the United States, the production of PBB products was banned in 1977. PBBs were used mainly to prevent fires in plastic parts used in electronic products, such as radios and televisions. PBBs were also used in plastics for business machine housings and other industrial products, such as motor housings.

## What happens to PBBs when they enter the environment?

- ☐ In 1973 in Michigan, animal feed was accidentally mixed with small amounts of PBBs. PBBs entered the environment during the disposal of contaminated feed and animal products.
- ☐ Very small amounts of PBBs may be released into the environment from poorly maintained hazardous waste sites and improper incineration of some plastics.

- ☐ In the past, PBBs entered the air, water, and soil during their manufacture and use.
- ☐ Chemical reactions with other pollutants or sunlight do not significantly reduce the levels of PBBs in air.
- ☐ PBBs do not dissolve easily in water; therefore, high levels of PBBs are not found in water.
- ☐ Sediments at the bottom of bodies of water, such as lakes and rivers, generally act as reservoirs for PBBs, and PBBs can remain there for years.
- ☐ Some PBBs in water may build up in fish.

## How might I be exposed to PBBs?

- ☐ Exposure in U.S. workplaces rarely occurs because PBBs are no longer manufactured.
- ☐ Most of the people in Michigan who were exposed to PBBs during the accidental contamination received very low levels of PBBs. Exposures were highest among populations living on contaminated dairy farms.
- ☐ Very low levels have been detected in the fat of the general public in the United States. This indicates that the general public is exposed to very low levels of PBBs from air, water, or food.

## How can PBBs affect my health?

Much of what we know about the health effects of PBBs in people comes from studies of the accident in Michigan. After news of the accident became widespread, many

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Michigan residents complained of health problems, including nausea, abdominal pain, loss of appetite, joint pain, fatigue, and weakness. However, it could not be clearly established that any of the problems were caused by PBBs.

Some people who ate the contaminated food developed skin disorders, such as acne and hair loss. PBBs probably caused the skin problems because other chemicals similar to PBBs also cause them.

Workers who were exposed to PBBs for a few days to months by breathing and touching them have developed acne. We know nothing about the health of people who are exposed to low levels of PBBs for long periods by eating, breathing, or skin contact.

Laboratory animals fed PBBs had body weight loss, skin disorders, and nervous system effects, and their livers, kidneys, thyroid glands, and immune systems were seriously injured. PBBs also caused birth defects in animals. Most of the effects in animals occurred after they ate large amounts of PBBs for short periods or smaller amounts for several weeks or months.

We do not know if the effects seen in animals would occur in people. The amounts of PBBs that caused health effects in animals are far greater than levels of PBBs normally found in the environment or in people.

### **How likely are PBBs to cause cancer?**

The Department of Health and Human Services (DHHS) has determined that PBBs may reasonably be anticipated to be carcinogens.

There is no evidence that people in Michigan who were exposed to higher levels of PBBs are more likely to get cancer. Animals treated with PBBs have developed liver tumors.

### **Is there a medical test to show whether I've been exposed to PBBs?**

There are tests to find out if PBBs are in blood, body fat, and breast milk. These measurements cannot show the exact amount or type of PBBs you were exposed to or for how long you were exposed. These tests do not predict whether you will experience harmful health effects.

Blood tests are the best method for detecting recent exposures to large amounts of PBBs.

Fat biopsies (small amounts of fat taken with a needle and syringe) may be better than blood tests for determining whether you were ever exposed to PBBs. These tests are not routinely available at your doctor's office because they require special equipment to complete them.

### **Has the federal government made recommendations to protect human health?**

There are no federal guidelines or recommendations for protecting people's health from exposure to PBBs.

### **Glossary**

**Carcinogen:** A substance that can cause cancer.

### **References**

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polybrominated biphenyls (PBBs) (Update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-639-6359. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.